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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,113	05/31/2001	Harald Michi	10191/1775	9218
26646	7590	10/27/2003	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			NGUYEN, THU V	
			ART UNIT	PAPER NUMBER

3661

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/857,113

Applicant(s)

MICHIE ET AL.

Examiner

Thu Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

The response filed on August 1, 2003 has been entered. By this response, no claim is amended, claims 15-30 are now pending in the application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 15-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 5,841,366) in view of Izumi et al (US 5,648,905).

As per claim 15-18, 21-23, 25-30, Yamamoto teaches a method for determining a future travel path of a first vehicle equipped with a distance sensor in which a relative position of a second vehicle is determined using the distance sensor (col.5, lines 51-56). Yamamoto does not explicitly teach determining the course path of the second vehicle, determining the future travel path and projecting the course path in direction of a position of the first vehicle. However, Yamamoto teaches determining the future travel path of the first vehicle in the direction of the first vehicle (col.6, lines 13-27), further, since Yamamoto teaches that the future travel path is

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determined based on the minimal distance between the second vehicle and the future travel path (col.5, lines 51-67; col.6, lines 13-27), and since when the distance between the second vehicle and the future travel path is minimal ($d_{11S4} - d'_{11S4}=0$, etc) the future travel path is the course path of the second vehicle, Yamamoto obviously teach determining the future travel path as a function of the course path of the second vehicle with the course path of the second vehicle is generated at the first vehicle. Moreover, Izumi teaches determining the course path of the first vehicle in the direction of the second vehicle (col.14, lines 1-4; col.6, lines 23-26), and the future path area of the first vehicle (col.5, lines 44-45), further, Izumi teaches calculating the first path using the distance and rotation angle between the two vehicles (col.14, lines 28-67; col.15, lines 1-37), this rotation and translation is similar to the process of projecting a point onto another point in different coordinate system. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to project the future travel path of the second vehicle in the direction of travel of the first vehicle after the course path has been determined since selecting an origin of direction at which the future path is calculated, and moving the course path to another origin of direction using the well known translation and rotation of the point to another point in different coordinate system requires only routine skill in the art.

As per claim 19-20, Izumi teaches filtering out the lane change of the second vehicle using comparison (col.7, lines 58-67; col.8, lines 1-28). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to filter out the second vehicle that

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has changed the lane in order to determine the distance of the first vehicle to the most relevant second vehicle that is in the lane of the first vehicle.

As per claim 24, using the ring memory to store first in first out data (FIFO) would have been well known.

Cited Prior Arts

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Foley et al ("Computer Graphics: Principles and Practice", second edition) teaches some basic concepts of projection and interpolation. Section 6.4 (pages 253-270) teaches projecting a point onto a projection plane (page 253-270). Page 1063 teaches the concept of interpolation in which intermediate point is determined from a known equation of a curve.

Response to Arguments

4. Applicant's arguments filed August 1, 2003 have been fully considered but they are not persuasive.

In response to applicant's argument on page 2, last paragraph through page 3, first paragraph, it is admitted that Yamamoto does not teach a future path area. However, Izumi

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clearly teach the future path area of the first vehicle in fig.10 and in col.5, lines 44-48 in which the radius is added with a predetermined width.

In response to applicant's argument on page 3, last two paragraphs, the claimed limitation "projecting the course path of a second vehicle traveling ahead in direction of a position of the first vehicle" does not explicitly teach extrapolation of the second vehicle path in the direction of first vehicle as asserted by the applicant. Although the concept of extrapolation of the path of the second vehicle back to the position of the first vehicle is disclosed in the specification page 17, lines 23-27, the claimed limitation does not explicitly teach that. It has been well known in mathematic and in the arts on computer graphics, projecting a curve onto another position (or plane) means to translate the curve to a plane of different coordinate system, the projection (moving) of the curve to another coordinate system is well known to involve parallel translating the curve and rotate the curve a certain angle of rotation to the direction of a plane. In fact, the specification page 19, lines 14-18, and page 17, lines 9-12 of the present application teaches the well known concept of projection of the course path of vehicle 702 (fig.7) to the direction of the first vehicle in which the path of the second vehicle is translated in parallel to the direction of the first vehicle. Due to the well known concept of projecting a curve to another location in a different coordinate system, and due to the projection concept disclosed in the specification page 19, lines 14-18, page 17, lines 9-12, the claimed limitation of projecting a path of the second vehicle to the first vehicle direction should not be read as extrapolation (or interpolation) of the second path back to the direction of the first vehicle as disclosed in page 17, lines 23-27. Also

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note that projection and interpolation (or extrapolation) are different concepts with different processing procedure from both the mathematic and computer graphics point of view.

In response to applicant's argument on page 4, first paragraph, Yamamoto teaches determining the path of the second vehicle (the vehicle in front of the host vehicle) (col.5, lines 51-col.6, line 32). In col.14, lines 1-4 (the third embodiment) of Izumi, Izumi teaches determining the path K1 of the first vehicle from the known path K2 of the preceding vehicle, since the path of the second vehicle can be determined in view of Yamamoto teaching, the first path K1 of the first vehicle can be determined from the disclosure of Izumi. As an additional remark, Izumi teaches determining the path K1 of the first vehicle as a function of the distance and angle between the two vehicles (col.14, lines 34-67; col.15, lines 1-37), this calculation is similar to the concept of translating and rotating (projecting) a point to another plane, therefore, although Izumi does not explicitly teach projecting the second path to the first path, the calculation taught by Izumi implies the projecting process.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any response to this final action should be mailed to:

Box AF

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 305-7687, (for formal communications; please mark "EXPEDITED
PROCEDURE")

Or:

(703) 305-7687 (for informal or draft communications, please label
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park V, 2451 Crystal
Drive, Arlington, VA., Seventh Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu Nguyen whose telephone number is (703) 306-9130. The examiner can normally be reached on Monday-Thursday from 8:00 am to 6:00 pm ET.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Cuchlinski, can be reached on (703) 308-3873. The fax phone number for this Group is (703)305-7687 .

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703)308-1113.



THUY V. NGUYEN
PRIMARY EXAMINER

October 21, 2003